

THE IMPACT OF BLOCK SCHEDULING ON AGRICULTURAL EDUCATION: A NINE YEAR COMPARATIVE STUDY

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ABSTRACT

In recent years, many states have implemented block scheduling in secondary schools. The purpose of this study was to examine the attitudes of agricultural educators in career and technical education at the beginning of the implementation of block scheduling and changes in their attitudes nine years later. Over the past nine years, teachers' concerns related to block scheduling have changed which is to be expected according to the Concerns-Based Adoption Model (CBAM). Teacher's attitudes regarding classroom instruction indicate student interest and discipline are challenges that have become more apparent to teachers who have been on block scheduling for some time. Agricultural educators do appear to have accepted and adapted FFA and SAE functions to block scheduling even though they do not feel these components have improved in general. Teachers have also adapted to the longer class periods by providing a variety of well planned activities to succeed on a block schedule.

INTRODUCTION

During the last decade, several states have implemented block scheduling in their secondary public schools to improve the educational process (Carroll, 1990). Until this recent reform, the traditional school day had been virtually unchanged in the public schools since the beginning of the twentieth century.

The prevalence of block scheduling has increased rapidly in southeastern states since the 1990's. During the 1992-1993 school year, only 1% of the public high schools in North Carolina were on block scheduling (Averett, 1994). In 2003, approximately 74% of public schools in North Carolina were using the block scheduling system (Charlotte Advocates for Education, 2003). While the numbers are unclear about how many schools across the country have moved to the block schedule, it is estimated the number is growing rapidly (Spoelstra, 2002).

Since a large number of schools have adopted the block schedule, there is concern as to how the new schedule is impacting the complete agricultural education program which consists not only of classroom and laboratory instruction, but of the National FFA student

organization (FFA) and experiential education called Supervised Agricultural Experiences (SAE) functions. In a study conducted nine years ago, some initial concerns of block scheduling included a decline in communication resulting from student to teacher classroom contact during only one semester, a decrease in the SAE projects because of the difficulty in enforcing the projects over the uninvolved semester, and a decrease in FFA membership and active members due to limited meeting times. The complete agricultural program encompasses much more than just classroom work, so this means there is increased planning and consideration when agricultural educators move toward block scheduling (Becton, 1996).

LITERATURE REVIEW/THEORETICAL FRAMEWORK

Recent research indicates teachers believe block scheduling helps create active learners and helps students to focus on subject matter. Teachers also believe block scheduling improves student discipline and academic performance (McCoy & Taylor, 2000). Not only do many teachers favor block scheduling, but students say block scheduling allows for more learning time, more opportunities to work with other students, more individual help, more time for test preparation, and generally they approve of it (Corley, 2003).

Even though it seems many people favor this schedule and initial results seem positive, not all of the data collected shows a positive influence of block scheduling on education. Research related to the effectiveness of block scheduling regarding student achievement has produced mixed results. In 1997, Skrobarcek reported high school students taking Algebra I in a block schedule had a higher rate of failure than those on a traditional schedule (Lawrence & McPherson, 2000). Problems with block scheduling may be due to transition time, stress at the beginning of the implementation process and difficulty for teachers to adapt (Harmston, Pliska, Ziomeck & Hackman, 2003; Spencer & Lowe, 1994).

A few studies have been conducted that specifically examine the impact of block scheduling on the total agricultural education program, which includes the instructional classroom, FFA, and SAE. Becton (1996) found block scheduling positively affects the FFA by increasing the number of agricultural classes offered, thereby more students are eligible for FFA membership. However, she also found block scheduling causes teachers to have less contact with students throughout the entire school year because students are only in the agricultural classroom for one semester and SAE projects are impacted because students are less likely to have experiential projects for the entire school year. Moore, Kirby & Becton (1997) also found FFA chapters suffered under the block scheduling system due to a lack of communication maintained between the teachers and students during the school year.

Baker and Bowman (2000) determined block scheduling had a positive impact on planning, teaching strategies, and overall agricultural education program enrollment but negatively impacted FFA and other extracurricular programs within agriculture education: however, they concluded teachers are able to be more innovative in their teaching techniques and they can complete entire labs in one school day. Spoelstra (2002) concluded agricultural educators used several different methods of instruction during one

day and felt they were able to have more laboratory activities and adequate planning time while on the block schedule.

Agriculture educators must be willing to adapt and change to get the most out of the education process and address potential concerns. The theoretical framework for this study is based on the Concerns-Based Adoption Model (CBAM) developed by Hall and his associates (Hall & Hord, 1987; Hall & Loucks, 1978), which addresses seven stages of concern.

These seven stages explain the different concern levels of individuals who are experiencing the change:

1. Awareness – The individual is aware of the change but is not concerned with it.
2. Informational – The individual would like to learn more about the change.
3. Personal – The individual questions how the change will impact him/her.
4. Management – The individual spends all of his/her time preparing for the change.
5. Consequence – The individual questions how he/she are doing and how to improve.
6. Collaboration – The individual questions how his/her work relates to others.
7. Refocusing – The individual combines ideas to see what works best for his/her situation.

These stages have three major implications for pre-service and in-service providers. One implication is the importance of addressing concerns of teachers and students and monitoring progress to determine areas of improvement. Another implication suggests the importance of monitoring the change process over several years. It may take time for concerns to be addressed and new concerns to emerge during the change process. It is imperative to provide assistance during the change process to work out problems and allow for good teaching strategies to arise. A final implication is that time for the change to become routine should be allowed (Bybee, 1996).

Moore, Kirby and Becton (1997) identified the initial teacher's perspectives of block scheduling and problems associated with block scheduling and agricultural education during the initial phases of the implementation of block scheduling in North Carolina. By replicating this study conducted in 1996, we will be able to determine if teachers are progressing through the Concerns-Based Adoption Model, to identify new concerns that might have arisen and to determine if teachers have adapted to block scheduling by implementing new teaching strategies.

PURPOSE AND OBJECTIVES

The primary purpose of this research was to identify the impact of block scheduling on the agricultural education field and to identify useful tools teachers use in the implementation of block scheduling. This research had four objectives.

1. To determine the current status of block scheduling in North Carolina.

2. To determine the current impact of block scheduling on the complete agricultural education program as perceived by agricultural educators as compared to their perceptions nine years ago.
3. To determine if agricultural educators concerns related to block scheduling have changed since the initial implementation of block scheduling in North Carolina.
4. To identify different agricultural educators' methods for teaching using the block scheduling system and determine if they have altered their methods of teaching using a block schedule over the past nine years.

METHODS AND PROCEDURES

This study consisted of both qualitative content analysis and quantitative survey research based primarily on a previous study conducted in 1996. An electronic survey instrument was created based on the paper survey created by previous researchers. The original paper survey was piloted with a group of teachers and as a result the researcher made clarity revisions to the original survey. The reliability estimate of the original survey was calculated using a Cronbach's alpha on the attitude component of the survey and yielded a .92.

In both studies, the instrument was sent to every senior teacher of an agricultural education program in North Carolina who could be identified in the North Carolina agricultural teacher's directory. The survey asked teachers about their personal attitudes pertaining to block scheduling and its impact on the total agricultural education program. Teachers were asked questions related to their attitudes regarding teacher experience, program enrollment, student involvement, and program quality before and after block scheduling.

There were 47 items on the online survey. The first 18 questions were devoted to determining background information on the teacher and the specific school and agricultural education program. The questions were both open-ended and multiple choice. The next 28 questions were formatted using a Likert-type scale with 1 representing "strongly disagree" and 5 representing "strongly agree." The Likert questions were worded both negatively and positively. The negative items were reverse scored when calculating the mean of the teachers' attitudes. The final three questions were open-ended and inquired as to what teachers were doing differently with regards to their instruction, FFA program, and SAE. They also provided a chance for the teacher to give suggestions for other teachers to use on the block schedule and voice any possible concerns. This qualitative data was analyzed using a constant comparative method to group similar items (Glaser & Strauss, 1967). Categories were created by grouping similar responses.

The survey was administered online. An email message was sent to each senior teacher in every agricultural education program ($N=249$) in the state requesting they complete the survey online. One e-mail follow up was sent to teachers who did not initially respond. A second follow up was administered by faxing all of the teachers who had not yet responded. Non-response error was controlled by comparing early and late respondents. Respondents were considered late respondents if they had not responded after one e-mail

reminder. A comparison of the attitudes of early and late respondents resulted in $t=1.162$, $df=75$, $p=.249$. The two groups were found not to be statistically different, so non-response was not considered as a threat to the validity of the results in this study. A total of 136 schools responded to the survey for a response rate of 55%.

RESULTS/ FINDINGS

Current Status of Block Scheduling

Ninety three percent of schools ($n=127$) surveyed were on block schedule, 7% ($n=8$) were not on block scheduling, with 1% ($n=1$) planning to change to block scheduling. In 1996, 45% ($n=63$) of the schools were on block schedule; therefore, North Carolina experienced a 48% increase in agricultural education programs on a block schedule over nine years.

Of the 127 schools on block schedules in 2004, 6 schools were in their first year of operation, 10 schools were in their second year of block scheduling and 111 schools had been on block scheduling three or more years. In 1996, of the 63 schools on block scheduling, 45 schools were in their first year of operation, 15 schools were in their second year of operation and only two schools had been on block scheduling more than three years. Between 1996 and 2004, 64 more agricultural education programs converted to a block schedule resulting in the majority of agricultural education programs using block scheduling by 2004.

In 2004, eight percent ($n=11$) teachers indicated they had never taught on a block schedule, 60% ($n=82$) indicated they had taught on both a block and traditional schedule, and 32% ($n=43$) indicated they only had experience teaching on a block schedule. The number of agricultural education teachers and the number of years experience they have had teaching block scheduling has greatly increased over the last nine years.

In 2004 teachers responded they had attended an average of 2.7 in-service workshops related to block scheduling. No data relating in-service was collected in the 1996 study.

Impact of Block Scheduling on the Complete Program

The second research objective was to determine the current impact of block scheduling on the complete agricultural education program as perceived by agricultural educators compared to their perceptions nine years ago. Questions focused on instructional quality, FFA quality, and SAE program quality of the agricultural education program. Only responses from both 1996 and 2004 teachers who indicated on the survey they had taught on both a traditional and block schedule were examined since they were able to reference their agricultural education programs prior to and after block scheduling. Teachers were asked to rate overall quality of the instructional program, FFA program and SAE prior to and after implementation of block scheduling. A modified Likert-type scale was used with 10 being excellent and 1 being poor.

The rating of the instructional program in 1996 was 7.4 prior to block scheduling and 7.53 after block scheduling. In 2004 the mean score of the instructional program was 7.4 prior to block scheduling and 7.92 after block scheduling. Both teachers in 1996 and

those surveyed in 2004 believed block scheduling had a slight positive impact on their instructional program.

In 2004 teachers agreed with those teachers surveyed in 1996 that block scheduling has had the greatest impact on the FFA. FFA membership in North Carolina has significantly increased in the last decade. However, in 1996 teachers felt more strongly that the quality of their FFA had been negatively impacted than in 2004. In 1996 prior to block scheduling the teachers rated their FFA program at 7.53 and after block scheduling at 5.95. In 2004 they felt the quality of the FFA was 7.37 prior to block scheduling and 6.51 after block scheduling.

The rating of the quality of the SAE program declined slightly in both groups. In 1996 the mean score for the quality of the SAE program prior to block scheduling was 5.95 and after block scheduling was 5.49. In 2004 the quality of the SAE program prior to block scheduling was 6.18 and after block scheduling was 5.63. Both groups indicated SAE is a weak component of the agricultural education component before and after block scheduling and this component was even weaker after block scheduling was implemented.

Teacher Concerns

The third research objective was to determine if agricultural educators' concerns related to block scheduling have changed since the initial implementation of block scheduling in North Carolina. Responses to specific items on the attitude scale were examined to see which items might merit special attention. Only responses from both 1996 and 2004 teachers who indicated on the survey that they had taught on both a traditional and block schedule were examined since they were able to reference their agricultural education programs prior to and after block scheduling. The overall mean attitude score in 1996 was 3.22 on a 5 point scale and in 2004 the mean attitude scale was 3.20 on a 5 point scale. Mean attitude scores above 3.50 were considered positive and mean attitude scores below 2.50 were classified as negative. Scores falling in between 3.50 and 2.50 were considered neutral.

As displayed in Table 1, teachers in 1996 responded positively toward ten items and in 2004 teachers responded positively on seven items. In 1996 teachers responded negatively toward five items and teachers in 2004 responded negatively to three items.

As shown in Table 1, mean item scores between those of teachers who responded in 1996 and 2004 yielded five responses that differed by more than 1.00 indicating a difference in concerns. Teachers in 2004 felt they more strongly disagreed with the following items: "It is more difficult to operate the FFA program since we implemented block scheduling," "Coordinating SAE visits are difficult when students are not in class," and "It is more difficult to prepare contest teams since we implemented block scheduling." Teachers in 2004 more strongly agreed with the following items: "I have difficulty maintaining student interest for the entire period since we implemented block scheduling" and "I have had more discipline problems in my class since we implemented block scheduling."

Table 1. *Attitudes of Teachers toward Block Scheduling*

Attitude Statement	1996		2004	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Labs can be utilized more effectively under block scheduling.	4.44 ^a	0.81	4.24 ^a	0.79
* It is more difficult to operate the FFA program since we implemented block scheduling.	4.13 ^a	0.95	2.05 ^b	1.21
Enrollment in Ag Ed classes has increased since we implemented block scheduling.	4.02 ^a	0.92	3.76 ^a	1.08
I personally like block scheduling.	4.00 ^a	1.10	4.00 ^a	1.14
I have more planning time.	4.00 ^a	0.87	3.70 ^a	1.16
Block scheduling has been successful in my school.	3.83 ^a	0.70	3.91 ^a	0.93
* Coordinating SAE visits are difficult when students are not in class.	3.75 ^a	0.96	2.16 ^b	1.06
* It is more difficult to prepare contest teams since we implemented block scheduling.	3.70 ^a	0.83	2.30 ^a	1.18
Most of my students like block scheduling.	3.70 ^a	0.88	3.88 ^a	0.85
I believe block scheduling is a better way to organize school time.	3.63 ^a	0.95	3.52	1.15
Students can focus better under block scheduling because they have fewer courses.	3.47	0.93	3.39	1.12
Higher quality students are now joining the FFA.	3.23	0.88	3.16	1.13
My students are learning more since we implemented block scheduling.	3.22	0.83	3.30	1.09
It is easier to teach SAE record keeping with the longer class periods.	3.21	0.87	3.30	0.92
Student achievement has improved with block scheduling.	3.20	1.03	3.28	1.06
The quality of the students in the program has improved since we implemented block scheduling.	3.16	1.09	3.17	1.14
Students have difficulty sitting through the longer periods of block scheduling.	3.12	0.97	2.65	1.20
It is more difficult for students to have a SAE program with block scheduling.	3.02	0.98	2.94	1.28
Block scheduling allows students to have different types of SAE Programs.	2.85	0.95	3.30	0.87
I worry that students don't learn as much as they did under a traditional schedule.	2.80	0.92	3.26	1.23
More students are showing interest in the SAE program under block scheduling.	2.57	0.92	2.73	0.93
*I have difficulty maintaining student interest for the entire period since we implemented block scheduling.	2.48 ^b	0.83	3.48	1.12
It is easier to cover all of the competencies outlined in the course description under block scheduling.	2.47 ^b	0.97	3.07	1.16
It is easier to develop a FFA Program of Activities under block scheduling.	2.33 ^b	0.97	2.64	1.11
*I have had more discipline problems in my class since we implemented block scheduling.	2.30 ^b	0.93	3.45	1.07
Attendance for FFA chapter meetings has increased since block scheduling.	2.25 ^b	1.13	2.57	1.08

Note. Scale= 1 Strongly Disagree, 2 Disagree, 3 Undecided, 4 Agree and 5 Strongly agree
^a positive response. ^b negative response.

*Differed by 1.00 or more between 1996 and 2004 indicating a difference in concerns.

Teachers were also asked to identify problems they had with block schedules in an open-ended question. As seen in Table 2 for teachers in 1996 and 2004 the most frequently identified problem was the difficulty to communicate and keep continuity with students not in class. Teachers were much less concerned with FFA membership and preparing for FFA contest. There was a great increase of concern relating bored students and keeping student interest in class.

Table 2. *Problems Identified by Teachers Using Block Schedules*

Problems	1996		2004	
	<i>f</i>	%	<i>f</i>	%
Difficult to communicate and keep continuity with students not in class	27	43	58	45
Bored Students/difficulty in maintaining student interest	5	8	24	19
Decreased FFA involvement	-	-	11	9
Scheduling difficulty/less quality of students	5	8	9	7
Loss of instructional time/not as much covered	13	21	9	7
Difficult to prepare for contests	9	14	8	6
Classes too long	-	-	6	5
Decrease in FFA Membership	28	44	4	3
Less guidance and difficulty in managing SAEs	-	-	4	3
Others	28	44	33	28

Teaching Methods Used on Block Scheduling

The fourth research question was to identify different agricultural educators' methods for teaching using the block scheduling system and determine if they have altered their methods of teaching on a block schedule over the past nine years. As seen in Table 3, a larger frequency of teachers indicated they were using a variety of teaching styles/methods in 2004. Teachers in 2004 suggested more alternative activities in their comments such as implementing more technology, field trips, more activities, and splitting the class into smaller periods.

Table 3. *Teacher Strategies for Successfully Using Block Scheduling*

Strategies	1996		2004	
	<i>f</i>	%	<i>f</i>	%
Use a variety of teaching styles/methods (media and activities)	29	46	86	72
Use of hands-on projects indoors				
or outdoors	8	13	27	22
Conduct well-managed, well-planned, and longer lab(s)	10	16	13	10
Use group activities in class	7	11	7	6
Increase correspondence with students (announcements, posters, etc.)	7	11	6	5
More field trips	-	-	6	5
Incorporate more technology (PowerPoint, Internet, video, etc.)				
	-	-	12	10
Complete outside work/activities	-	-	8	7
Split up classes into smaller periods	-	-	7	6
Others.	17	27	44	37

As seen in Table 4, teachers in 2004 had more advice for teachers going on block scheduling than those in 1996. More teachers suggested the use of media/activities to break up the class and to be more prepared by planning. They suggested trying new things, utilizing more hands-on activities, having more FFA functions and having a positive attitude.

Table 4. *Advice for Others Going on Block Scheduling*

Advice	1996		2004	
	<i>f</i>	%	<i>f</i>	%
Use a variety of media/activities to break up class (less lecture).	9	14	42	36
Plan! Plan! Plan! Prepare and stay on task, pace yourself.	-	-	39	34
Be unique, innovative, flexible, and try new and fun things!	4	6	10	9
Utilize hands-on activities, shop, and lab work.	-	-	10	9
Have more FFA meetings, social activities, and communication	-	-	9	8
Have positive attitude, be patient and relax.	-	-	5	4
Use pacing guides.	5	8	3	3
Allow breaks.	-	-	3	3
Others.	17	27	51	40

CONCLUSIONS/RECOMMENDATIONS

Eighty-seven percent of agricultural educators in North Carolina have been teaching on a block schedule for more than three years. They are still uncertain about the majority of their attitudes regarding block scheduling, but their experience has made them feel more confident in discussing problems and concerns and their solutions related to block scheduling. In 2004, teachers were able to provide many suggestions for other teachers adapting to a block schedule.

After nine years of block scheduling, the majority of teachers feel labs are more effectively utilized under block scheduling, enrollment in classes has increased, both students and teachers like it, teachers have more planning time, and it is a better way to organize time. This trend indicates that agricultural educators are accepting the changes block scheduling has introduced to the educational process in North Carolina.

Over the past nine years teachers’ concerns related to block scheduling have changed, which is to be expected according to the Concerns-Based Adoption Model (CBAM). Agricultural educators in North Carolina indicate they are less concerned with conducting FFA and SAE activities on a block schedule than before, but they are still concerned communication with FFA members and students is more difficult on a block schedule. They also do not feel the overall quality of these two components have improved. This complacency may be due to their acceptance of block schedule as routine or they may have created new but not improved strategies for handling FFA and SAE activities. More research is needed to identify specific strategies they have implemented in their FFA and

SAE programs that work on a block schedule to improve the quality of the FFA and SAE program.

In general, teachers also believe block scheduling has had a slightly positive impact on the instructional component of their program, but they are concerned about the fact that maintaining student interest and discipline is more challenging on a block schedule. Earlier research conducted by McCoy & Taylor (2000) found teachers believed block scheduling would improve student discipline, which contradicts this study. The concern exhibited by current teachers in North Carolina related to student interest and discipline may be indicative of their arrival at the consequence level of the Concerns-Based Adoption Model (CBAM). At the consequence level they are questioning how they are doing and how to improve.

Teachers indicate they are using a greater variety of teaching methods on block scheduling than they did in 1996, which supports the findings of Baker and Bowman (2000) that teachers are able to be more innovative in their teaching techniques on a block schedule. Evidently teachers in North Carolina have adapted their teaching strategies to the longer class periods provided by block scheduling. Many of these teachers attended county and state in-service training focused on using a variety of teaching strategies on a block schedule. These teachers agree a variety of methods hold the key to conducting a successful program on block scheduling.

Educational leaders need to utilize the wisdom of teachers who have had long-term experience teaching on a block schedule to help others proceed through the change process. This can be done by listening and sharing advice from those experienced with those just beginning on a block schedule. Valuable advice selected from our experienced teachers might include: "Be flexible and adapt with changes," "Think outside the box," "Develop a way to let FFA members to know about activities," or "Use your time to be diverse in your instruction."

Teacher concerns related to block scheduling need to continue to be monitored and further research should be conducted to determine specific pre-service and in-service strategies to address their current concerns of communication with students, student interest and discipline. Research should also be conducted to find easy to use strategies for conducting quality SAE and FFA components while teaching on a block schedule.

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